



1967-1968 INSTRUMENT CATALOG

FLUKE



JOHN FLUKE MFG. CO., INC. 1967-1968 SHORTFORM CATALOG

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This catalog offers a brief description of each Fluke and Mon-tronic product. It introduces for the first time many new Fluke instruments which can be seen by demonstration in any facility and at industry shows during the winter and spring.

The products announced in this catalog are in keeping with the Fluke reputation for quality, and of extending the performance and accuracy of the standards laboratory to all precision measurement applications. All Fluke products incorporate the latest concepts in design and execution and may be relied on for years of accurate and dependable service.

Each new Fluke and Montronics instrument, although designed basically for the commercial market, must withstand the 400 pound hammer blows and the vibration tests of MIL-T-945A as a minimum. Fluke's environmental facility is used to evaluate operation over the temperature range from 0°C to 50°C specified for new instrument design. In many instances, derating factors are applied outside of this range to even greater extremes.

Fluke maintains a component evaluation group to analyze and seek new and better components. Through extensive testing by this group the electrical and mechanical defects in components and structural parts are isolated and corrected before new products are released to production.

For complete information or a demonstration of any Fluke product, use the convenient postcard supplied with this catalog or contact your nearest Fluke representative.

Fluke products represent a unique combination of sound design, conservative specifications, rugged construction, "standard-of-the-art" performance and are supported by local service.



NEW



MODEL 9500A TRUE RMS DIGITAL VOLTMETER AUTOMATIC MEASUREMENT AND DISPLAY ALL SOLID STATE

For the first time, the advantages of a true RMS voltmeter and the ease of operation of a fully automatic digital voltmeter are combined in one instrument.

The 9500A precisely measures the true RMS value of any AC signal up to 1100 volts RMS regardless of waveshape or harmonic content. Input range selection, decimal point and calibration are truly automatic. Nixie® tubes provide a digital display, readable over a wide viewing angle. Both display and range may be varied by means of front panel control.

Options such as remote control, printer output and low capacity probe are available.

BRIEF SPECIFICATIONS:

VOLTAGE RANGE:	1 mv to 1100 V RMS	CREST FACTOR:	10
ACCURACY:	$\pm(0.05\% \text{ of input} + 0.015\% \text{ of range})$ from 50 Hz to 10 kHz Reduced accuracy specifications from 50 Hz to 1 MHz	INPUT POWER:	115/230V AC 50-440 Hz
FREQUENCY:	20 Hz to 1 MHz	SIZE:	5½" high x 17" wide x 15" deep
INPUT RESISTANCE:	Model 9500A—1 megohm shunted by 20 pf Probe option—1 megohm shunted by 7 pf	PRICE:	Model 9500A—\$2490.00

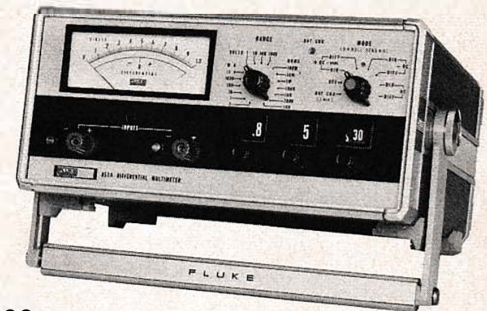
MODEL 853A DIFFERENTIAL MULTIMETER

Model 853A is the most accurate low-cost multimeter utilizing differential techniques to measure AC/DC voltage and current and resistance. The 853A features accuracies of $\pm(0.2\% + 0.02\% \text{ FS})$ for DC voltage and current measurements and $\pm(0.5\% + 0.05\% \text{ FS})$ for AC voltage and current measurements over a range from 0 to 1100 volts and 0 to 10 amperes. Resistance accuracy is $\pm(0.2\% + 0.02\% \text{ FS})$, 0 to 100 megohms. Input resistance is 11 megohms for DC voltage and 1 megohm for AC. Resolution of 0.01% of range is provided by two-decade switches and an interpolating vernier with 10% overranging capability on both decades.

Model 853A operates from line and/or rechargeable or replaceable batteries. Another of the new instruments housed in the all new FLUKE modular package, the 853A is small in size—only 11½" wide x 5¼" high x 9" deep and is provided with a detented handle for ease in carrying and for convenient positioning of the instrument when in use.

BRIEF SPECIFICATIONS:

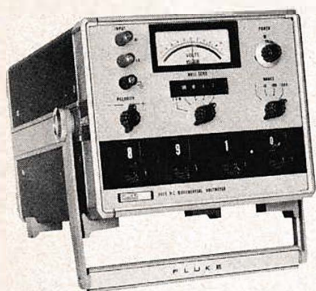
ACCURACY:	$\pm(0.2\% + 0.02\% \text{ FS})$ for DC voltage and current $\pm(0.5\% + 0.05\% \text{ FS})$ for AC voltage and current	OVERLOAD PROTECTION:	1200 volts RMS or DC on any range 12 amps on 10 amp range 2 amps on all other ranges
VOLTAGE RANGE:	0–1100 V AC/DC in 4 ranges	PRICE:	Replaceable batteries \$445.00 Line Only \$475.00 Line and rechargeable batteries \$495.00
FREQUENCY RANGE:	20 Hz to 30 kHz		
CURRENT RANGE:	0–10 amps AC/DC in 6 ranges		
RESISTANCE RANGE:	0–100 megohms in 7 ranges		
ACCURACY:	$\pm(0.2\% + 0.025\% \text{ FS})$		



Fluke solid state AC/DC and DC Differential Voltmeters offer the widest range of performance and accuracy in the market. Most units operate from either internal rechargeable batteries or 115/230 V, 50-440 Hz line power. Battery power is essential for measurement where maximum accuracy demands complete line isolation. Input ranges are 1, 10, 100 and 1000 volts, each with 10% over-ranging. The 880 series and the 895A feature 100 μ v end scale null sensitivity and six-digit in-line readout provided by four decade switches plus a high resolution interpolating vernier. The 870 series and the new Model 891A provides 1 mv end scale null sensitivity and five digit in-line readout using three decades and an interpolating potentiometer. Decimal point placement is automatic with range selection on all models.

Fluke voltmeters are electrically and mechanically designed to perform under the extremes of temperature, shock, vibration and humidity. Each zener diode reference is processed and computer matched and selected to establish excellent stability, tracking and temperature coefficient parameters. Fluke manufactures all of the precision wire wound resistors used. All solid state voltmeters are lightweight for portability and are provided with a tilt-back bail or functional detented handle for operator convenience. Recorder output feature is available on all Fluke differential voltmeters.

New Model 891A Solid State Differential Voltmeter with Infinite Input Impedance at Null Over the Entire Range



Model 891A



Model 891AR

Model 891A is the lowest priced Fluke solid state DC differential voltmeter with infinite input resistance at null up to 1100 V DC. Housed in the new Fluke "modular package," the 891A is available in several functional and attractive styles. The half-rack version is provided with a detented handle that provides for ease in carrying and may be used to tilt instrument at convenient angle or folded completely out of the way. The full-width rack model is in a slim line profile (only 3½" high) allowing maximum utilization of rack space.

INPUT VOLTAGE:

0 to 1100 V DC in four ranges

ACCURACY (% OF INPUT):

$\pm(0.02\% + 0.001\% \text{ of range} + 10 \text{ } \mu\text{v})$

NULL RANGE:

1 mv through 100V end scale in six ranges

INPUT IMPEDANCE:

Infinite at null from 0 to 1100 VDC

RESOLUTION:

10 μ v maximum vernier and meter

POWER:

115/230 VAC, 50-500 Hz

DIMENSIONS:

891A—8½" wide x 7" high x 12½"

891AR—17½" wide x 3½" high x 12½"

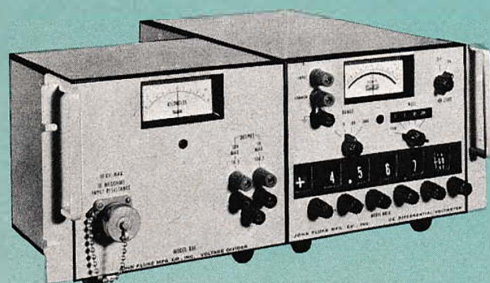
PRICES:

891A—\$595.00

891AR—\$595.00

ACCESSORIES:

Battery Option \$100



Rack Mounting Configurations

Two Fluke solid-state voltmeters may be rack-mounted side-by-side with the 881A-103 Dual Rack Mounting Kit. This kit includes right and left handles, plus a center key plate, which attach rigidly to the side rails of the instruments for an overall standard EIA rack width and height of 19 inches and 6-31/32 inches respectively. The 881A-102 kit similarly adapts a single voltmeter for rack mounting, and includes handles. Price for 881A-103 Dual Rack Mounting Kit, \$15.00; 881A-102 Single Rack Mounting Kit, \$25.00.

SPECIFICATIONS FOR AC/DC MODELS



Model 887A

INPUT VOLTAGE:
0 to 1100V AC or DC in four ranges

ACCURACY (% OF INPUT):
DC: $\pm(0.0025\% + 0.0001\%$ of range $+ 5 \text{ uv})$
AC: 30 Hz to 5 kHz, 0.001 to 500V
 $\pm(0.05\% + 0.0025\%$ of range)
 $\pm 0.1\%$ above 500V
Reduced accuracy to 5 Hz and 100 kHz

NULL RANGES:
100 uv through 100V end scale in seven ranges

INPUT IMPEDANCE:
DC: Infinite at null from 0 to $\pm 11\text{V}$ DC
10 megohms above $\pm 11\text{V}$ DC
AC: 1 megohm, 40 pf

RESOLUTION:
1 ppm of range (1 uv maximum), vernier and meter

POWER:
Model 887A — 115/230 VAC, 50-440 Hz
Model 887AB — As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $1\frac{3}{4}$ " deep

WEIGHT:
Model 887A — Approximately 13 pounds
Model 887AB — Approximately 14 pounds

PRICE:
Model 887A — \$1375.00
Model 887AB — \$1535.00



Model 883A

INPUT VOLTAGE:
0 to 1100V AC or DC in four ranges

ACCURACY (% OF INPUT):
DC: $\pm(0.005\% + 0.0002\%$ of range $+ 5 \text{ uv})$
AC: 20 Hz to 5 kHz, 0.001 to 1100V
 $\pm(0.1\% + 25 \text{ uv})$
Reduced accuracy to 5 Hz and 100 kHz

NULL RANGES:
100 uv through 100V end scale in seven ranges

INPUT IMPEDANCE:
DC: Infinite at null from 0 to 11V DC
10 megohms above 11V DC
AC: 1 megohm, 40 pf

RESOLUTION:
1 uv maximum, vernier and meter

POWER:
Model 883A — 115/230 VAC, 50-440 Hz
Model 883AB — As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $1\frac{3}{4}$ " deep

WEIGHT:
Model 883A — Approximately 13 pounds
Model 883AB — Approximately 14 pounds

PRICE:
Model 883A — \$1215.00
Model 883AB — \$1375.00



Model 873A

INPUT VOLTAGE:
0 to 1100V AC or DC in four ranges

ACCURACY (% OF INPUT):
DC: $\pm(0.02\% + 0.001\%$ of range $+ 10 \text{ uv})$
AC: 20 Hz to 10 kHz, 0.001 to 1100V
 $\pm(0.2\% + 25 \text{ uv})$
AC: 10 kHz to 20 kHz, 0.1 to 1100V, $\pm 0.3\%$
Reduced accuracy to 5 Hz and 100 kHz

NULL RANGES:
1 mv through 100V end scale in six ranges

INPUT IMPEDANCE:
DC: Infinite at null from 0 to 11V DC
10 megohms above 11V DC
AC: 1 megohm, 40 pf

RESOLUTION:
10 uv maximum, vernier and meter

POWER:
Model 873A — 115/230 VAC, 50-440 Hz
Model 873AB — As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $1\frac{1}{4}$ " deep

WEIGHT:
Model 873A — Approximately 12 pounds
Model 873AB — Approximately 13 pounds

PRICE:
Model 873A — \$875.00
Model 873AB — \$1035.00



Model A88 Isolation Amplifier

The all-solid-state Model A88 Isolation Amplifier is designed to provide isolation between voltmeter and recorder—eliminating the necessity of using a recorder with input terminals isolated from ground. Thus, virtually all potentiometric recorders and many inexpensive galvanometer-type recorders can be used with the aid of the A88. Model A88 is also excellent for performing accurate DC microvolt and nanoampere measurements in the presence of common mode voltages up to 1100V DC and 3V AC, 50 to 500 cycles.

INPUT CURRENT RANGE:
0 to ± 2 microamperes

OUTPUT VOLTAGE RANGE:
0 to ± 2 volts

MAXIMUM OUTPUT CURRENT:
1 milliampere

INPUT ISOLATION FROM CHASSIS:
Greater than 5×10^{11} ohms

PRICE:

A88	Isolation Amplifier	\$125.00
A88-1	Metal Instrument Case	\$ 20.00
A84-2	Mercury Battery Kit	\$ 5.00
A84-3	AC Power Pack	\$ 25.00
A88-4	Rechargeable Battery Pack with Metal Instrument Case	\$100.00

SPECIFICATIONS FOR DC MODELS



Model 895A

INPUT VOLTAGE:
0 to ± 1100 V DC in 4 ranges

ACCURACY (% OF INPUT):
 $\pm(0.0025\% + 0.0001\% \text{ of range} + 5 \text{ uv})$

NULL RANGES:
100 uv through 100V end scale in seven ranges

INPUT RESISTANCE:
Infinite at null from 0 to ± 1100 V DC

RESOLUTION:
1 uv maximum, vernier and meter

RATIO ACCURACY:
 $\pm 0.0012\%$ of setting at 0.1 ratio and above
 $\pm 0.00012\%$ of terminal linearity below 0.1 ratio

POWER:
Model 895A—115/230V AC $\pm 10\%$, 50-1000 Hz
15 watts, 20 VA

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $14\frac{3}{4}$ " deep

WEIGHT:
16 lbs.

PRICE:
\$1095.00



Model 885A

INPUT VOLTAGE:
0 to ± 1100 V DC in four ranges

ACCURACY (% OF INPUT):
 $\pm(0.0025\% + 0.0001\% \text{ of range} + 5 \text{ uv})$

NULL RANGES:
100 uv through 100V end scale in seven ranges

INPUT IMPEDANCE:
Infinite at null from 0 to ± 11 V DC
10 megohms above ± 11 V DC

RESOLUTION:
1 uv maximum, vernier and meter

POWER:
Model 885A — 115/230 VAC, 50-440 Hz
Model 885AB — As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $14\frac{3}{4}$ " deep

WEIGHT:
Model 885A — Approximately 13 pounds
Model 885AB — Approximately 14 pounds

PRICE:
Model 885A — \$965.00
Model 885AB — \$1095.00



Model 881A

INPUT VOLTAGE:
0 to 1100V DC in four ranges

ACCURACY (% OF INPUT):
 $\pm(0.005\% + 0.0002\% \text{ of range} + 5 \text{ uv})$

NULL RANGES:
100 uv through 100V end scale in seven ranges

INPUT IMPEDANCE:
Infinite at null from 0 to 11V DC
10 megohms above 11V DC

RESOLUTION:
1 uv maximum, vernier and meter

POWER:
Model 881A—115/230 VAC, 50-440 Hz
Model 881AB—As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $14\frac{3}{4}$ " deep

WEIGHT:
Model 881A — Approximately 13 pounds
Model 881AB — Approximately 14 pounds

PRICE:
Model 881A — \$825.00
Model 881AB — \$955.00



Model 871A

INPUT VOLTAGE:
0 to 1100V DC in four ranges

ACCURACY (% OF INPUT):
 $\pm(0.02\% + 0.001\% \text{ of range} + 10 \text{ uv})$

NULL RANGES:
1 mv through 100V end scale in six ranges

INPUT IMPEDANCE:
Infinite at null from 0 to 11V DC
10 megohms above 11V DC

RESOLUTION:
10 uv maximum, vernier and meter

POWER:
Model 871A—115/230 VAC, 50-440 Hz
Model 871AB—As above, plus internal rechargeable battery pack

DIMENSIONS:
7" high x $8\frac{1}{2}$ " wide x $11\frac{3}{4}$ " deep

WEIGHT:
Model 871A—Approximately 11½ pounds
Model 871AB—Approximately 12½ pounds

PRICE:
Model 871A — \$565.00
Model 871AB — \$695.00

Infinite Input Resistance at Null from 0 to 500V DC

Differential Voltmeters



SPECIFICATIONS FOR AC/DC MODELS

MODEL	ACCURACY (% OF INPUT)	NULL RANGES	MAXIMUM METER RESOLUTION	WEIGHT	PRICE
803B	DC: $\pm 0.05\%$ from 0.1 to 500V DC $\pm(0.05\% + 50 \text{ uv})$ below 0.1V DC	$\pm 10, \pm 1,$ $\pm 0.1, \pm 0.01\text{V AC}$ and DC; $\pm 100, \pm 0.001\text{V AC}$	50 uv DC; 5 uv AC	Cabinet — 27½ lbs. Rack — 25 lbs.	803B — \$875.00 803BR — \$895.00
	AC: (20 Hz to 10 kHz) $\pm 0.2\%$ from 0.5 to 500V AC $\pm(0.2\% + 25 \text{ uv})$ from 0.001 to 0.5V AC (10 Hz to 20 Hz) $\pm(0.5\% + 25 \text{ uv})$ from 0.001 to 500V AC (5 Hz to 10 Hz) $\pm(3\% + 25 \text{ uv})$ from 0.001 to 500V AC				
803D	DC: $\pm 0.02\%$ from 0.1 to 500V DC $\pm(0.02\% + 25 \text{ uv})$ below 0.1V DC	$\pm 10, \pm 1, \pm 0.1,$ $\pm 0.01, \pm 0.001\text{V AC}$ and DC $\pm 100\text{V AC}$	5 uv AC and DC	Cabinet — 28 lbs. Rack — 26 lbs.	803D — \$1055.00 803DR — \$1075.00
	AC: (30 Hz to 5 kHz) $\pm 0.1\%$ from 0.5V to 500V AC $\pm(0.1\% + 25 \text{ uv})$ from 0.001 to 0.5V AC (20 Hz to 10 kHz) $\pm 0.15\%$ from 0.5V to 500V AC $\pm(0.15\% + 25 \text{ uv})$ from 0.001 to 0.5V AC Reduced accuracy to 5 Hz and 100 kHz				
823A	DC: $\pm 0.01\%$ from 0.5V to 500V DC $\pm(0.01\% + 10 \text{ uv})$ below 0.5V DC	$\pm 10, \pm 1, \pm 0.1,$ $\pm 0.01, \pm 0.001\text{V AC}$ and DC $\pm 100\text{V AC}$	5 uv AC and DC	Cabinet — 28 lbs. Rack — 26 lbs.	823A — \$1215.00 823AR — \$1235.00
	AC: (30 Hz to 5 kHz) $\pm 0.1\%$ from 0.5V to 500V AC $\pm(0.1\% + 25 \text{ uv})$ from 0.001 to 0.5V AC (20 Hz to 10 kHz) $\pm 0.15\%$ from 0.5V to 500V AC $\pm(0.15\% + 25 \text{ uv})$ from 0.001V to 0.5V AC Reduced accuracy to 5 Hz and 100 kHz				



SPECIFICATIONS FOR DC MODELS

801B	$\pm 0.05\%$ from 0.1 to 500V DC $\pm(0.05\% + 50 \text{ uv})$ below 0.1V	$\pm 10, \pm 1, \pm 0.1,$ $\pm 0.01\text{V DC}$	50 uv	Cabinet — 24 lbs. Rack — 21½ lbs.	801B — \$485.00 801BR — \$505.00
825A	$\pm 0.02\%$ from 0.1 to 500V DC $\pm(0.02\% + 25 \text{ uv})$ below 0.1V	$\pm 10, \pm 1, \pm 0.1,$ $\pm 0.01, \pm 0.001\text{V DC}$	5 uv	Cabinet — 25 lbs. Rack — 22 lbs.	825A — \$590.00 825AR — \$610.00
821A	$\pm 0.01\%$ from 0.5 to 500V DC $\pm(0.01\% + 10 \text{ uv})$ below 0.5V	$\pm 10, \pm 1, \pm 0.1,$ $\pm 0.01, \pm 0.001\text{V DC}$	5 uv	Cabinet — 25 lbs. Rack — 22 lbs.	821A — \$795.00 821AR — \$815.00

SPECIFICATIONS COMMON TO ALL FLUKE VOLTMETERS

INPUT VOLTAGE:
0 to 500V in four ranges

DC INPUT RESISTANCE:
Infinite at null from 0 to 500V DC

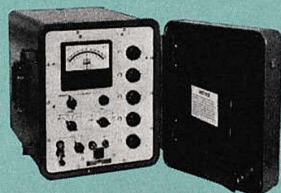
AC INPUT RESISTANCE:
1 megohm, 35 pf (500 and 50V AC ranges)
1 megohm, 50 pf (5 and 0.5V AC ranges)

REFERENCE:
Standard Cell
Zener diode optional. Specify "AG" suffix to model number. Add \$25.00 to price.

RECORDER OUTPUT:
0 to $\pm 18 \text{ mv}$ minimum for full scale right and left meter deflections

DIMENSIONS:
AC/DC Cabinet Models —
9¾" w x 13" h x 16" d
DC Cabinet Models —
9¾" w x 13" h x 14" d

POWER:
115/230 VAC, 50-440 Hz



1. Rack Models

All Fluke differential voltmeters are available in either cabinet models, or rack mounting models (add "R" to model number). Standard EIA panel dimensions for rack models—6-31/32" x 19". Depth behind panel: DC models—14"; AC/DC models—15½".

2. Transit Cases

Where operation and storage in severe relative humidity conditions up to and including 100% are required, all cabinet model Fluke differential voltmeters are available with splash-proofed panel and MIL-T-945A combination case as illustrated.

True RMS Voltmeters



Model 931A



Model 910A



Model 910AR

Model 931A combines the advantages of a true RMS voltmeter for accurate measurement without waveform error and the null balance accuracy of a differential voltmeter.

Featuring high resolution, no last digit uncertainty, and large digital readout the Model 931A may be used as a direct reading voltmeter or a differential voltmeter to measure pulse trains, noise and other complex waveforms up to 1100V RMS. The 931 series is available with low-capacity probe or BNC input, line or line plus rechargeable battery power.

BRIEF SPECIFICATIONS

VOLTAGE RANGE:

Differential Mode: 0.01 to 1100 volts RMS in five ranges (10% overranging)
Direct Mode: 0.01 to 1100 volts RMS in eleven ranges

ACCURACY:

Differential Mode: $\pm(0.05\%$ of reading $\pm 0.005\%$ of range) from 30 Hz to 50 kHz. Reduced accuracy specifications from 10 Hz to 1 MHz
Direct Mode: $\pm 3\%$ of end scale

INPUT IMPEDANCE:

1 megohm shunted by less than 8 pf

CREST FACTOR:

Differential Mode: 10
Direct Mode: 10 at end scale increasing proportionately to 30 at $\frac{1}{2}$ end scale, or 1500 V peak

INPUT POWER:

115/230 VAC, 50-440 Hz (plus rechargeable batteries in "B" Models)

SIZE:

7" high x 8 $\frac{1}{2}$ " wide x 11 $\frac{3}{4}$ " deep

PRICE:

Model—931A—\$895.00 931P—\$945.00
Model 931AB—\$995.00 931PB—\$1045.00

The Model 910A true RMS Voltmeter combines true RMS response with 1% accuracy over a broad frequency range. Its true RMS response, by definition, guarantees that the accuracy of the indicated reading is maintained regardless of input waveform characteristics.

BRIEF SPECIFICATIONS

RANGE:

100 uv to 300 V in twelve ranges
-72 to +52 dbm

FREQUENCY RESPONSE:

10 Hz to 7 MHz

ACCURACY:

$\pm 1\%$ of full scale 50 Hz to 800 kHz
Reduced accuracy from 20 Hz to 7.0 MHz

CREST FACTOR:

Three at full scale. Nine at range switchover point

INPUT IMPEDANCE:

10 megohms shunted by 30 pf (0.001V to 0.3V) or 15 pf (1.0V to 300V)

PRICE:

Cabinet Model—\$525.00 Rack—\$545.00

Precision Voltage Dividers



Model 80D



Model 80E

Models 80D and 80E are tapped for 10V and 1V outputs at rated input, for use with all Fluke differential voltmeters and any conventional potentiometer. Both instruments incorporate special Fluke-manufactured precision wirewound resistors with extremely low temperature coefficients, which maintain the excellent division ratio accuracy for any input voltage up to rated maximum, and over a 10°C temperature range. In one configuration, Model 80E may be bench mounted, rack mounted with solid-state voltmeters, or singly rack mounted. All voltage dividers have zero center panel meters to indicate polarity and magnitude of high voltage input, and draw 1 ma. current at rated input.

MODEL NO.	MAX. INPUT VOLTAGE	TOTAL RESISTANCE	DIVISION RATIO			DIVISION RATIO ACCURACY	PRICE
			500V OUT	10V OUT	1V OUT		
80E-5	5 KV	5 Meg	—	500:1	5,000:1	$\pm 0.01\%$	\$ 225.00
80E-10	10 KV	10 Meg	—	1000:1	10,000:1	$\pm 0.01\%$	\$ 350.00
80D-30	30 KV*	30 Meg	60:1	3000:1	30,000:1	$\pm 0.01\%$	\$1,095.00

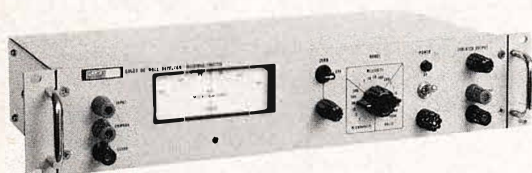
*Intermediate voltages between 10 KV and 30 KV available upon request.

High Accuracy for Low Level Measurements

Null Detector Microvoltmeter



Model 845A



Model 845AR

Models 845A, 845AB, and 845AR are designed for extremely high input resistance, sensitivity and isolation. These instruments are excellent for standardization of voltage dividers, intercomparison of standard cells, ratio measurements, voltage measurements in combination with a DC calibrator, general purpose solid state voltmeter and many other applications.

Mil-spec shock and vibration requirements are met. Size is 7" x 8" (two units mount in a 19" rack). Price is \$350 for the Model 845A, or \$395 for the Model 845AB with rechargeable batteries.

BRIEF SPECIFICATIONS

INPUT RANGES:

1 uv to 1000V DC in 19 end scale ranges

ACCURACY:

Model 845A and 845AB— $\pm(2\% \text{ end scale} + 0.1 \text{ uv})$

Model 845A— $\pm(3\% \text{ end scale} + 0.1 \text{ uv})$

INPUT RESISTANCE:

100 megohms on 300 mv range and above
10 megohms on 100 mv range and below

OVERLOAD CAPABILITY:

Up to 1100 V DC may be applied on any range without damage. Typical recovery time is 4 seconds

INPUT ISOLATION:

10^{12} ohms at 25°C and below 50% relative humidity

INPUT POWER:

Model 845A and 845AR—115/230 VAC

$\pm 10\%$, 50-440 Hz

Model 845AB rechargeable battery or

115/230 V AC $\pm 10\%$, 50-440 Hz

SIZE:

Model 845A and 845AB—7" high x 8½" wide x 8" deep

Model 845AR—3½" high x 19" wide x 8" deep

PRICE:

Model 845A—\$350.00

Model 845AB—\$395.00

Model 845AR—\$395.00

Electronic Galvanometers



Model 840A



**Model
841A**

Fluke all-solid-state Electronic Galvanometers now include Models 840A, 840B, 841A, and 841B. Unique design features fast response, virtual immunity to overload damage, battery or AC operation, operation in any position, and solid mechanical design that withstands MIL-spec shock and vibration. The 840A and 840B may be purchased without case for OEM applications.

FULL SCALE RANGES:

840A and 841A
 ± 30 nanoamperes (2 na/scale div.)
 ± 300 nanoamperes (20 na/scale div.)
 ± 3 microamperes (200 na/scale div.)

840B and 841B
 ± 100 nanoamperes (5 na/scale div.)
 ± 1 microampere (50 na/scale div.)
 ± 10 microamperes (500 na/scale div.)

INPUT RESISTANCE:

840A and 841A—180 ohms

840B and 841B—18 ohms

SIZE:

840A and 840B
5½" high x 3" wide x 4¾" deep without case (case depth is 6½" behind panel including rear terminals)

SIZE:

841A and 841B
5½" high x 4" wide x 6½" behind panel including rear terminals

PRICE:

840A and 840B
Less batteries and case . . . \$175.00

A84-1 Metal Instrument Case . . . \$ 20.00

A84-2 Mercury Battery Kit . . . \$ 5.00

A84-3 AC Power Pack . . . \$ 25.00

A84-4 Rechargeable Battery Pack and Metal Case . . . \$100.00

841A and 841B
With Mercury Batteries and Case \$230.00

0 to 30,000V DC

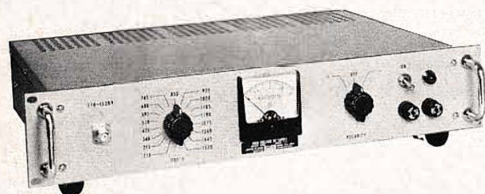
High Voltage Power Supplies



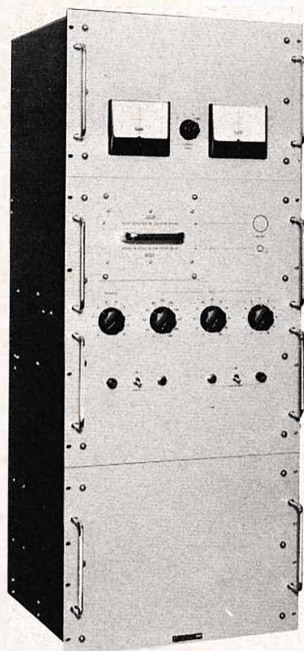
New! Model 415A



Model 412B



Model 409A



Model 430A

Fluke high voltage power supplies have become the standard of the industry where quality and reliability are essential, and provide unexcelled performance through sound electrical and mechanical design. Typical is the new Model 415A, 0-3111 V DC supply featuring less than 1 mv peak-to-peak ripple, 5 mv resolution, and the same excellent regulation and stability of earlier Fluke 3 kv supplies. The 415A has been packaged in the 3½" rack configuration to afford maximum economy in space.

Every specification of Fluke power supplies is conservative; customers have found this to be true in thousands of applications and have demonstrated their confidence by specifying Fluke when their voltage demands increase.

Many applications call for high calibration accuracy, while others require high stability and a low ripple component. All are combined with excellent line and load regulation to insure that Fluke power supplies meet or exceed virtually all systems requirements.

Fluke supplies are produced in volume and a large stock is maintained making them readily available and competitively priced.

Following are typical types of equipment which demand power supply specifications best met by Fluke instruments:

PHOTOMULTIPLIER TUBES

IONIZATION CHAMBERS

TRAVELING-WAVE TUBES

PROPORTIONAL COUNTERS

KLYSTRONS

MASS SPECTROMETERS

CATHODE-RAY TUBES

BACKWARD-WAVE OSCILLATORS

HIGH-RESOLUTION X-RAY EQUIPMENT

ELECTROSTATIC EQUIPMENT

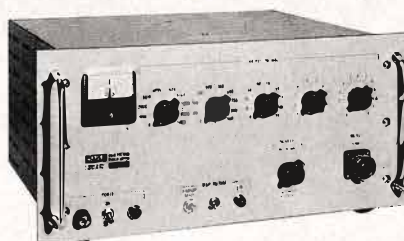
LASERS

MASERS

Detailed specifications are available for all models of Fluke power supplies, including data on environmental capabilities. A comprehensive manual supplied with each instrument details operating, calibration and service.



Model 408B

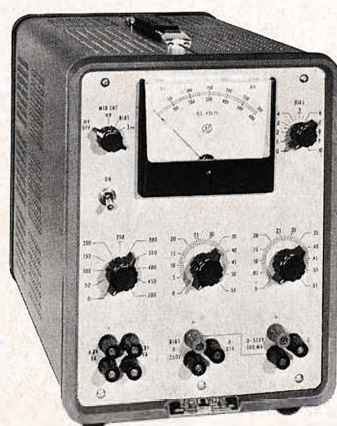


Model 410B

MODEL	VOLTAGE	CURRENT REGULATION (%)			STABILITY (%)		CALI- BRATION ACCURACY (% of Output)	MAX. RIPPLE RMS	RESOLU- TION	PRICE
		(ma)	LINE	LOAD	PER HR.	PER DAY				
409A	170-1530V	0-3	0.01	1.2	0.005	0.02	—	0.002%	85V steps	\$ 350.00
412B*	0-2100V	0-30	0.001	0.001	0.005	0.02	0.25	500 uv	5 mv	410.00
415A*	0-3111V	0-30	0.001	0.001	0.005	0.02	0.25	100 uv	5 mv	495.00
408B*	0-6000V	0-20	0.001	0.001	0.005	0.02	0.25	1 mv	5 mv	665.00
410B*	0-10, 000V	0-10	0.001	0.001	0.005	0.02	0.25	1 mv	5 mv	975.00
430A	10KV-30.22KV	0-10	0.005	0.01	0.005	0.03	0.25	5 mv	100 mv	3,900.00
430B*	10KV-30.22KV	0-50	0.005	0.02	0.005	0.03	0.25	5 mv	100 mv	4,900.00

*Incorporates overcurrent protection circuit.

Model 407D General Purpose Power Supply



Versatile Model 407D continues to add to a long list of laboratory and industrial applications. Prime contributors to all-around usefulness are 0.01% short term stability, 2 mv resolution, precision sampling string, dual bias and filament outputs, tight line and load regulation, and low ripple. For convenience and safety, the main DC output may be removed or applied instantly without disturbing bias or filament outputs. Rack version of this supply is available as Model 407DR.

BRIEF SPECIFICATIONS

VOLTAGE:
0-555V
CURRENT:
0-300 ma
REGULATION:
Line — 0.005%
Load — 0.01%

STABILITY:
Per hour — 0.01%
Per day — 0.05%
CALIBRATION ACCURACY:
0.5%
MAX. RIPPLE RMS:
500 uv

RESOLUTION:
2 mv
PRICE:
Cabinet Model (407D) — \$380.00
Rack Model (407DR) — \$400.00



New! Model 335A



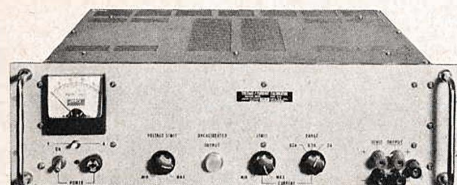
Model 332A



Model 315A



Model 313A



Model 383B

Model 335A DC Voltage Calibrator, Differential Voltmeter and Null Detector

Model 335A is a DC Calibrator and DC Null Detector housed in the same case. Both units are separately terminated and may be independently operated. In combination they perform as a ± 30 ppm differential voltmeter with infinite input resistance at null. Separately the $\pm 0.003\%$ voltage source is a DC calibrator over a 0-1100 volt DC range and the null detector is a DC voltmeter/null detector over a range from 10 uv to 1100 volts. Price is \$2485.00.

Model 332A Solid State DC Voltage Calibrator

Featuring 0.003% calibration accuracy, all solid-state design, variable current limiting and overvoltage trip, Model 332A satisfies the most critical requirements for a precision DC calibrator or voltage reference source.

This unit has a range of 0 to 1,111.110 volts in steps as small as 1 microvolt. Line and load regulation are 0.0005% of setting. Seven in-line decade switches provide 0.1 ppm resolution on each voltage range. Over-current protection automatically limits output current at any preset level between 1 ma and 60 ma. Over-voltage protection automatically disables output voltage if level exceeds setting of front panel control.

Model 315A High Speed, Remotely Programmed Voltage Calibrator

Model 315A is designed specifically for the high-speed, remote-programming of voltage, current limit, and polarity. Voltage changes can be programmed in increments as small as 100 microvolts. A multi-bit parallel BCD signal programs the calibrator with 1-2-4-8 code.

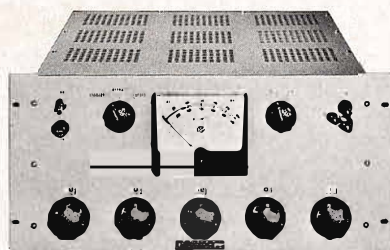
Accuracy is $\pm 0.025\%$ or 100 uv over a voltage range of 0 to 50V DC. Output is 0 to 1 ampere. Settling time is 1 millisecond per volt for a 500 milliampere load and faster than 5 milliseconds per volt for a 1 ampere load.

Other Fluke all solid-state calibrators include Model 313A Voltage Calibrator, Model 382A Voltage/Current Calibrator, and Model 383B Voltage/Current Calibrator with remote programming for systems applications. In these models, voltage range is 0 to 50 V DC, and current range is 0 to 2 amperes, with 5 ppm line and load regulation.

MODEL	VOLTAGE	CURRENT	REGULATION		LOAD	STABILITY,	%	PER	CALI- BRATION	MAX.	RESOLUTION	PRICE
			LINE			HOUR	DAY	MO.	ACCURACY	RIPPLE		
										RMS		
313A	0-50	0-2A	0.0005	0.0005	0.002	0.0025	0.005	0.01%		50 uv	10 uv	\$1295.00
315A	0-50	0-1A	0.0005	0.0005	0.005	0.005	0.01	0.025%		500 uv	100 uv	\$1895.00
332A	0-1111	0-50 ma	0.0005	0.0005	0.0015/wk.	0.0025/6 mo.	0.003%			20-40 uv	0.1 ppm	\$2295.00
335A*	0-1111	0-50 ma	0.0005	0.0005	0.0015/wk.	0.0025/6 mo.	0.003%			20-40 uv	0.1 ppm	\$2485.00
382A (VOLTAGE MODE)	0-50	0-2A	0.0005	0.0005	0.002	0.0025	0.005	0.01%		50 uv	10 uv	\$1595.00
382A (CURRENT MODE)	0-50	0-2A (four ranges)	0.0005	0.001	0.0025	0.005	0.005	0.02%	0.002% of range		10 na	
383B (VOLTAGE MODE)	0-50	0-2A	0.0005	0.0005	0.005	0.005	0.01	0.025%		50 uv	100 uv	\$1950.00
383B (CURRENT MODE)	0-50	0-2A (four ranges)	0.001	0.001	0.005	0.005	0.01	0.025%	0.005% of range		10 na	

*Calibrate Portion Only.

Precision Voltage Calibrators



Model 301E



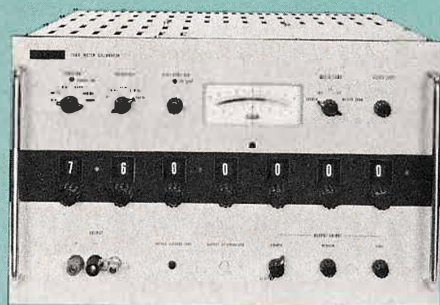
Model 351A

Fluke Models 301C, and 301E Precision Voltage Calibrators offer a remarkable degree of all-around usefulness. Conservative parameters of accuracy, stability, regulation, resolution and ripple are combined with exceptionally high current capabilities in all instruments. Chopper stabilization and standard cell reference are common features. These supplies are particularly well suited to applications demanding ruggedness and time-proven reliability.

As an accurate, high-resolution, constant current source for general purpose use, rugged and reliable Model 351A combines design features such as standard cell reference, chopper-stabilization, six-digit in-line readout, and voltage limiting.

MODEL	VOLTAGE	CURRENT (ma)	REGULATION LINE (%)	LOAD (%)	STABILITY, % HOUR	% DAY	PER MO.	CALIBRATION ACCURACY	MAX. RIPPLE RMS	RESOLUTION	PRICE
301E	1.02-512	0-300	0.005	0.01	0.005	0.01	0.01	0.1%	2 mv	500 uv	\$ 695.00
301C	1.02-1012	0-400	0.005	0.01	0.005	0.01	0.01	0.1%	2 mv	500 uv	985.00
351A (Constant Current)	0-100	0-100	0.01	0.01	0.005	0.01	—	0.05%	0.05%	0.1 ua	845.00

Model 760A Meter Calibrator



NEW

Model 760A is a complete all solid-state calibration system for AC and DC voltmeters, ammeters, ohmmeters and multimeters. This versatile instrument incorporates an AC/DC source, a DC null detector, voltage and current measuring circuits for both AC and DC, a precision voltage reference and a ten megohm precision resistance decade. Interlocks and safety features are provided to protect both the operator and the instrument being calibrated.

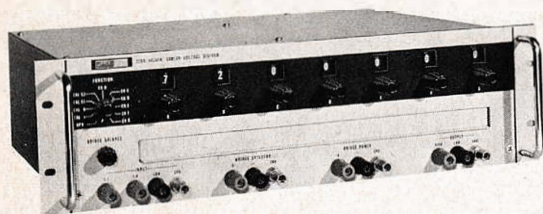
Voltmeters are calibrated by reading the percentage of error directly from the 760A or by using it to furnish a precision voltage and reading the error in volts from voltmeter being calibrated. Similar techniques may be applied to the calibration of ammeters with the calibrator set for current output.

The 760A provides decade resistance from 0 to 10 megohms for the calibration of ohmmeters.

The 760A may also be used to calibrate meter shunts rated up to 10 amperes.

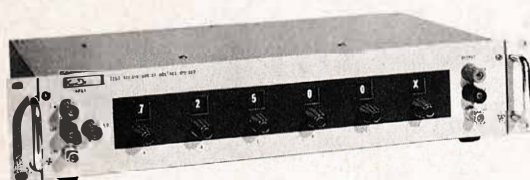
BRIEF SPECIFICATIONS

	DC VOLTAGE AND CURRENT	AC VOLTAGE AND CURRENT
VOLTAGE RANGE:	0.001V to 1000V in 0.1 mv steps	0.001V to 1000V in 0.1 mv steps
VOLTAGE ACCURACY:	±(0.1% of setting + 25 uv) Also ±0.33% at 1 mv, 3 mv, and 10 mv	±(0.25% of setting + 25 uv) Also ±0.33% at 1 mv, 3 mv, and 10 mv
CURRENT RANGE:	1 ua to 10A in 1 ua steps	1 ua to 10A in 1 ua steps
CURRENT ACCURACY:	±(0.25% of setting + 0.025 ua)	±(0.25% of setting ±0.025 ua)
FREQUENCY:		60 Hz and 400 Hz (60 Hz phase locked to power line)
RESISTANCE:		
Range:	0 to 10 megohms	
Accuracy:	±(0.1% of setting + 0.5 ohm)	
Resolution:	1 ohm	
PRICE:	\$2485.00	



Model 720A Decade Voltage Dividers

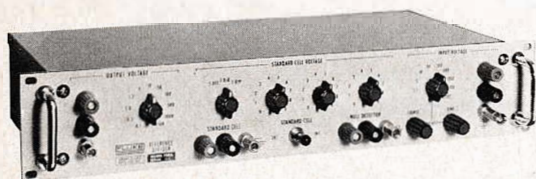
Model 720A is a primary ratio standard which meets the most exacting requirements of the standards laboratory. A precision resistive device employing the Kelvin-Varley circuit, the 720A offers ± 0.1 ppm absolute linearity, ± 0.1 ppm/ $^{\circ}\text{C}$ temperature coefficient of linearity and self calibration making it the most accurate instrument available for the comparison of primary and secondary voltage and resistance standards. Linearity has a power derating coefficient as low as 0.2 ppm per watt which is achieved by carefully matching resistor temperature coefficient to near zero. This permits operation up to 1100 volts and 11 watts. Both input and output taps are switched. Price is \$1195.00.



Model 725A

Kelvin Varley Voltage Divider

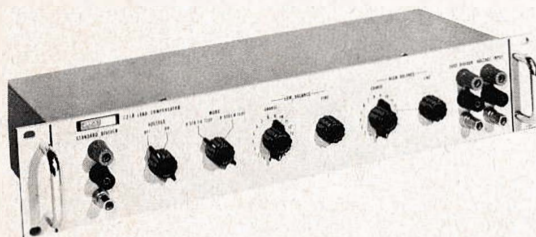
Model 725A is a precision resistive divider designed for use in applications such as calibration systems and test consoles where the higher accuracy of the Model 720A is not justified. The 725A features 1 ppm resolution and 5 ppm linearity, which are adequate for use as a company standard. The excellent stability of 2 ppm/year and 1 ppm/ $^{\circ}\text{C}$ temperature coefficient of linearity permit use in applications outside of the standards laboratory. Price is \$390.00.



Model 750A

Reference Voltage Divider

Model 750A is an extremely accurate and stable reference voltage divider for calibration of DC voltmeters, volt boxes, DC calibrators and other precision devices. Ratio accuracy is $\pm(0.001\% + 0.5 \text{ uv})$ for one year. The switched input taps range from 1100 volts to 1.1 volts and switched output taps range from 1100 volts to 0.1 volt. The unit also has a separate output which covers the range from 1.017000 volts to 1.019999 volts in microvolt steps so that the divider may be standardized directly to any standard cell bank EMF. The 750A also incorporates a solid state overvoltage protection circuit which prevents damage when voltages as high as 2KV are applied on any range. Price is \$995.00.



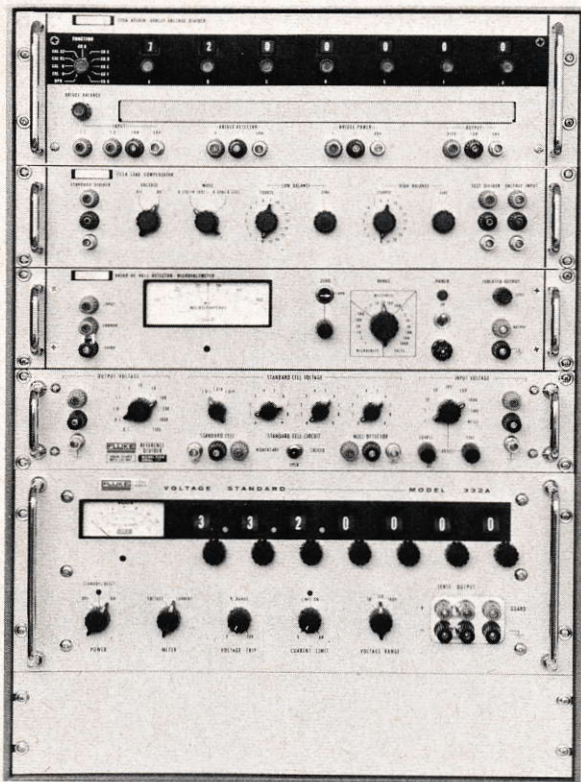
Model 721A Lead Compensator

Model 721A provides lead compensation, where ratios between the standard and test divider are as great as 4000:1. Mode selection for electrically interchanging the standard and test divider, as well as voltage ON-OFF for operator protection, are additional features of the Model 721A. Price is \$245.00.

	INPUT RESISTANCE	LINEARITY	RESOLUTION	MAX. INPUT	VOLTAGE MAX. PWR.
720A	100K ohm $\pm 0.005\%$ at 1.0 input 100K ohm $\pm 0.005\%$ at 1.1 input	± 1 ppm at dial setting of 0.1 to 1.1	0.1 ppm	1100 volts	11 watts
725A	440K ohm $\pm 0.02\%$ at 1.1 input	± 5 ppm at dial setting of 0.1 to 1.1	1 ppm	1100 volts	2.7 watts
	TC OF LINEARITY	SIZE	PRICE		
720A	± 0.1 ppm of input/ $^{\circ}\text{C}$	5 $\frac{1}{4}$ " high x 19" wide x 10 $\frac{1}{2}$ " deep	\$1,195.00		
725A	± 1 ppm/ $^{\circ}\text{C}$	3 $\frac{1}{8}$ " high x 19" wide x 10 $\frac{1}{2}$ " deep	\$390.00		

7100 SERIES

DC Calibration Systems



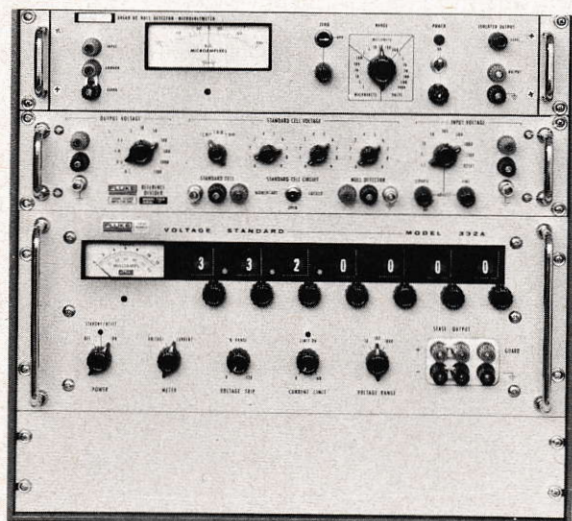
MODEL 7101A DC VOLTAGE AND RATIO CALIBRATION SYSTEM

NEW DC VOLTAGE AND RATIO CALIBRATION SYSTEM

All solid state...has its own self-calibrating KV divider... adjustable reference divider...high impedance null detector ...DC voltage calibrator—accurate to better than 10 ppm from 0 to 1100 volts...dc voltage ratio calibration accurate to ± 0.1 ppm from 0 to 1100 volts.

7100 Series DC voltage and ratio calibration systems offer the utmost in accuracy and flexibility. Many combinations and variations are possible, all utilizing off the shelf standard FLUKE instruments. 7100 Systems may be completely tailored to the individual calibration and measurement application, and contain one or more of the resistive devices described on the preceding page together with the Model 845AR Null Detector and a suitable FLUKE DC source.

7100 Systems are designed for accuracy and ease of operation in the calibration of differential and digital voltmeters, voltage dividers, reference power supplies, laboratory potentiometers and ratio sets, and X-Y recorders and are used as a DC voltage standard, DC voltage ratio standard, DC differential voltmeter and voltage divider.



MODEL 7100A DC VOLTAGE CALIBRATION SYSTEM

TYPICAL SYSTEM CONFIGURATIONS

MODEL 7100A DC VOLTAGE CALIBRATION SYSTEM

COMPONENTS:

Model 332A Voltage Standard
Model 750A Reference Divider
Model 845AR Null Detector/Microvoltmeter

PRICE:

\$3930.00 Including Cabinet and Leads

FUNCTIONS:

General Calibrator (332A only)
Differential Voltmeter or Digital Voltmeter Calibrator (source)
Power Supply Calibrator (measuring system)
Differential Voltmeter (332A, 845AR)

OPTIONAL DC VOLTAGE AND RATIO CALIBRATION SYSTEM

COMPONENTS:

412B Power Supply
750A Reference Divider
845AR Null Detector
725A Voltage Divider
721A Lead Compensator

FUNCTIONS:

Differential or Digital VM Calibrator (source)
Power Supply Calibrator (measuring system)
Differential VM
Ratio Calibrator

MODEL 7101A DC VOLTAGE AND RATIO CALIBRATION SYSTEM

COMPONENTS:

332A DC Voltage Standard
750A Reference Divider
845AR Null Detector/Microvoltmeter
720A Kelvin-Varley Voltage Divider
721A Lead Compensator

PRICE:

\$5370.00 Including Cabinet and Leads

FUNCTIONS:

General Calibrator (332A only)
Differential Voltmeter or Digital VM Calibrator (source)
Power Supply Calibrator (measuring system)
Differential Voltmeter
Ratio Calibrator

OPTIONAL DC VOLTAGE CALIBRATION SYSTEM

COMPONENTS:

Model 412B Power Supply
Model 845AR Null Detector
Model 750A Reference Divider

FUNCTIONS:

Differential Voltmeter or Digital VM Calibrator (source)
Power Supply Calibrator (measuring system)

Extreme Accuracy with Versatility

Thermal Transfer Standard



Model 540B

For $\pm 0.01\%$ RMS AC transfer measurements without calibration curves or correction tables, Fluke offers the new all-solid-state Model 540B AC/DC Thermal Transfer Standard. Thermocouple burnout is virtually eliminated by a unique protection circuit. In addition, a search circuit provides visual indication of the percent of rated input. DC input to the unit is conveniently reversed via front panel switch, and DC turnover is held to less than 0.01% of input. Self-contained galvo is Fluke solid-state electronic type. One configuration of Model 540B is used for both bench and rack mounting. Accessories include A40 Current Shunts for thermal AC/DC current transfers and A55 Thermal Converters for extension of frequency response to 50 MHz.

BRIEF SPECIFICATIONS

VOLTAGE RANGE:
0.25 to 1000V in 14 ranges

ACCURACY (% OF INPUT)

Range	Frequency	AC/DC Difference
All except 1000V	5 Hz - 50 kHz	$\pm 0.01\%$
1000V	5 Hz - 20 kHz	$\pm 0.02\%$
1000V	20 kHz - 50 kHz	$\pm 0.04\%$
0.5 thru 10V	50 kHz - 1 MHz	$\pm 0.1\%$

GALVANOMETER RESOLUTION:
0.0012%/scale div. at rated input

DIMENSIONS:
Cabinet — 7" high x 17" wide x 7 3/4" deep
Rack — 7" high x 19" wide x 7 3/4" deep

PRICE:
\$895.00 (Rack mounting kit, \$15.00)



Model 102 VAW® Meter

The Model 102 VAW® Meter measures voltage, current, and power over a wide frequency range. It has a maximum true power sensitivity of 225 microwatts and will measure up to 18 kilowatts over the frequency range of 20 Hz to 100 kHz.

BRIEF SPECIFICATIONS

VOLTAGE FULL SCALE:

1.5-600V

CURRENT FULL SCALE:

1.5 ma-30 amps

PRICE:

Cabinet Model — \$660.00

Rack Model — \$680.00

Shunts — \$30.00 each

POWER FACTOR RANGE	FREQUENCY RESPONSE	ACCURACY	INPUT IMPEDANCE
1.0	20 Hz-40 kHz	3%	
1.0	40 kHz-100 kHz	10%	1 megohm
0.1	20 Hz-20 kHz	3%	25 pf
0.1	20 kHz-40 kHz	10%	

Model 710B Impedance Bridge



Model 710B is designed to allow simple and rapid selection of any one of five different bridge configurations for measurement of AC and DC resistance, capacitance, inductance, dissipation factor (D), and storage factor (Q). The 710B is also capable of many specialized measurements such as remote capacitance, incremental inductance, biased electrolytics, and tuned circuit resonant frequencies. Basic accuracies are: resistance, $\pm 0.1\%$; capacitance, $\pm 0.2\%$; inductance, $\pm 0.3\%$. Frequency range is DC to 20 kHz, with quick-change generator and detector networks for the discrete frequencies of 100 Hz, 120 Hz, 400 Hz, 500 Hz, 800 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, and 20 kHz. (1 kHz networks are supplied as standard equipment.) Model 710B price is \$485.00. Rack model 710BR is \$505.00.

CURRENT TRANSFER ACCESSORIES

Model A55 Thermal Converters



Coaxial Model A55 Thermal Converters are standards with frequency response, thermal characteristics, and stability essentially identical to NBS theoretical standards. An equipment setup for AC calibration or measurement utilizing a Model A55 would typically include Model 540B and A55-110 Accessory Kit described below.

RANGE:
Nine converters rated 0.5, 1, 2, 3, 5, 10, 20, 30 and 50 volts, each useful from 1/2 to 1 times rating.

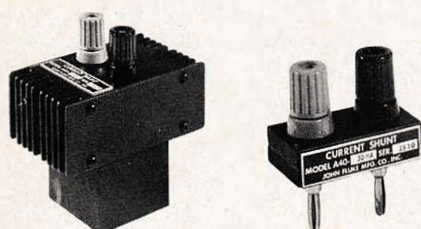
AC/DC DIFFERENCE:

Converter	5 Hz-1 MHz	10 MHz	30 MHz	50 MHz
0.5V*	±0.01%	+0.10%	+0.60%	+1.5%
1V-10V	±0.01%	±0.03%	±0.10%	±0.10%
20V-50V	±0.01%	±0.05%	±0.10%	—

*0.5V converter supplied with Fluke ±0.01% test report at 1v, 30, and 50 MHz. Fluke or NBS test report for any converter optional at extra cost.

PRICE: 0.5V, \$100.00; 1V, 2V, 3V, 5V, (each) \$125.00; 10V, 10V, 20V, 30V, 50V, (each) \$150.00

Model A40 Current Shunts



Model A40

Models A40 and A40A current shunts are designed to convert the Model 540B to an RMS current transfer instrument useful over a 2.5 milli-ampere to 20 ampere range, with a frequency response from 5 Hz to 100 kHz. Fluke or NBS test reports are available which give correction figures to ±0.02% at nominal cost. Without the correction figures, accuracy is as specified below.

CURRENT RANGES: 10 ma to 20 amps RMS with 14 shunts

ACCURACY (% OF INPUT):

RANGE	FREQUENCY	AC/DC DIFFERENCE
10 ma to 5 amps	5 Hz to 20 kHz	±0.03%
	20 kHz to 50 kHz	±0.05%
	50 kHz to 100 kHz	±0.1%
10 amps to 20 amps	5 Hz to 20 kHz	±0.03%
	20 kHz to 50 kHz	±0.1%

PRICE:

Model	Range	Price
A40	10, 20, 30 ma	\$30.00 each
	50, 100, 200, 500 ma	\$60.00 each
	1, 2, 3, 5 amps	\$75.00 each
A40A	10, 20 amps	\$75.00 each



Model A40A

Model A45 Current Transfer Switch



The Model A45 is designed to eliminate the need for interchanging AC and DC leads to the current shunts. The A45 is connected to the current shunt by a special cable (see below).

Accessories:

Model 212852 Cable (18" long). One required to connect A40A to A45. Price \$13.00

Model 212860 Cable (24" long). One required to connect A40A (10-20 amp) shunt to front panel connector or connect A45 to plug in shunt. Price \$18.75

Accessory Kit A55-110

Model A55-110 Accessory Kit includes three adapters, interconnecting cable, and coaxial tee for use between an AC source and Model A55 Thermal Converters. Price \$75.00.

Model C41 and C55 Storage Cases

Model C41 Royalite Case with molded insert conveniently stores a complete set of A40 Current Shunts. Model C55 Case similarly protects a set of A55 Thermal Converters and A55-110 Accessory Kit. Each case is \$55.00, or no charge with complete sets of shunts or converters.



Model 291A Omega Commutator



NEW

The Omega system of global navigation utilizes a network of highly stable transmitters operating in the VLF Spectrum... The Model 291A Omega commutator is designed to permit selected use of these ultra stable transmissions for frequency comparison in the 207 Series VLF Receivers.

For proper VLF tracking and frequency comparisons using Omega, the receiver must be able to receive only one "segment" of the eight segment transmission format. This is necessary to eliminate the phase differences of the received signals caused by unequal transmitter/receiver distances from the eight stations.

The 291A provides this capability without the need for costly and complex modification to the Model 207 Receiver. The 207-291A combination also provides for the selective blanking of the timing transmissions from WWVL, Boulder.

BRIEF SPECIFICATIONS

SYNCHRONIZATION: Either manual or automatic

PHASE SHIFT CONTROL: Manually adjustable for both advance and retard

REFERENCE INPUT: 100 Hz at nominally 0.75V peak to peak

POWER REQUIREMENTS: 115/230 VAC $\pm 10\%$, 50-440 Hz

SIZE: 1 3/4" high x 19" wide x 9" deep

PRICE: \$495.00

Model 207 VLF Receiver/Comparator



Featuring exceptional sensitivity of 10 nanovolts and an 80 db dynamic range without AGC or operator adjustment, the new Model 207-1 is a coherent VLF tracking receiver for calibration of laboratory and communications center frequency standards. Frequency coverage is from 8.0 to 31.9 kHz in steps of 100 Hz with an additional channel at 60.0 kHz.

The Model 207-1 is the only commercially available receiver using integrated circuits. Multi-channel capability plus high sensitivity assures round-the-world reception of VLF signals for frequency standardization. This instrument has been especially designed for ease of use including independent chart and digital readouts and extensive self-checking capability.

BRIEF SPECIFICATIONS

FREQUENCY COVERAGE: 8.0 to 31.9 kHz in steps of 100 Hz, plus channel at 60.0 kHz

RECEIVER SENSITIVITY: 10 nanovolt signal at 50 ohm antenna input terminal enables phase tracking

SELECTIVITY AND SPURIOUS REJECTION: All spurious, including image frequencies and signal frequencies from 0 to 10 MHz beginning at 100 Hz either side of the selected channel, are rejected by 60 db

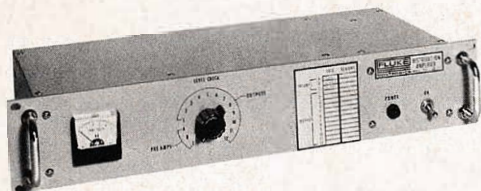
DYNAMIC RANGE: Symmetrical clipping in RF and IF stages assures reliable phase-locked servo operation over an 80 db range of carrier level without the use of AGC

POWER: 115/230 VAC $\pm 10\%$, 50-440 Hz, or DC source of standby batteries

SIZE: 7" high x 19" wide x 18" deep; net weight 35 pounds

PRICE: \$2775.00

Frequency Distribution Amplifiers



Multi-channel amplifiers featuring high stability, freedom from harmonic and spurious outputs and high interchannel isolation are being widely used for distribution of standard frequencies in laboratories, communications installations, and industrial facilities. Military and space communications transmitters and receivers must operate to frequency accuracies unheard of a few short years ago. Any number of synthesized transmitters and receivers can be operated from a central frequency standard by distributing the standard frequency.

Model 203A

Model 203A provides 12 channels in any combination of 100 kHz, 1 MHz and 5 MHz. Features include high output, extreme selectivity, and high stability.

BRIEF SPECIFICATIONS

INPUTS: Individual preamplifiers with level adjustment for 100 kHz, 1 MHz, and 5 MHz, 0.5 to 5.0 V RMS into 50 ohms

OUTPUTS: 12 separate outputs may be any combination of 3 input frequencies, each individually adjustable from 0.5 to 4V RMS into 50 ohms

STABILITY: Better than 1×10^{-11} standard deviation for one second interval at 1 MHz

HARMONICS: At least 60 db below signal level

SPURIOUS: At least 80 db below signal level.

POWER: 115/230 VAC $\pm 10\%$, 50-440 Hz, approximately 35 watts

SIZE: $3\frac{1}{2}$ " high x 19" wide x 9" deep; net weight 17 pounds

PRICE: \$1395.00

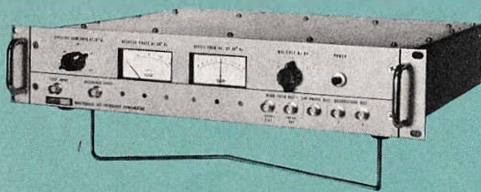
SPECIAL MODELS AVAILABLE

MODEL 203-1—Operates from either 115/230 VAC or 22 to 30 VDC. Senses loss of AC input and switches automatically to DC operation. Meets requirements of MIL-A-22305C and MIL-E-16400E.

MODEL 203-4—Twenty channels of 100 kHz with front panel metering. Built to MIL-E-4158C as a guide.

MODEL 203-34—Ten channels each of 100 kHz, 1 MHz and 5 MHz. Meets requirements of MIL-STD-826, Level Gp.

Model 103A Frequency Comparator



NEW

The Model 103A now makes possible the comparison of test and reference frequencies from 100 kHz to 1 MHz in 100 kHz steps and from 1 MHz to 5 MHz in 1 MHz steps. Output may be read directly on frequency counter, front panel meters and/or output recorder where 1 part in 10^9 difference frequency can be measured in 1 second or 1 part in 10^{10} in 10 seconds. Model 103A has a maximum resolution of 1 part in 10^{11} . Quadrature function low frequency outputs are also available for display on an oscilloscope or X-Y recorder.

BRIEF SPECIFICATIONS

INPUT FREQUENCIES: 100 kHz to 1 MHz in 100 kHz steps; 1 MHz to 5 MHz in 1 MHz steps
Both reference and test inputs, 0.28 to 14 volts p-p into 4000 ohms

MULTIPLICATION: Selectable with front panel switch to provide effective comparison from 10^5 to 10^9 Hz

FRONT PANEL METERS: Linear phase and fractional frequency difference

OUTPUTS: a) 100 kHz reference derived from reference input, 1V RMS at 50 ohms

b) $100 \text{ kHz} \pm m \Delta f$ where m is multiplier of the test input and Δf is the resulting difference

c) Sine and Cos of $m \Delta f$ 1V p-p into 10K ohms

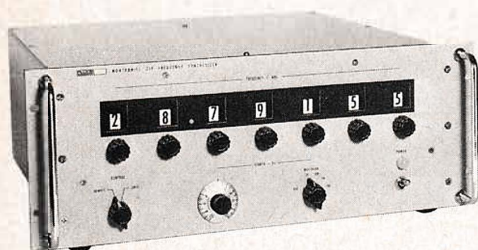
d) Both linear phase and fractional frequency difference meters to drive recorder, 0-3.6 (open circuit) and 0-1 ma pot pot current for any load 0-2K ohms

POWER: 115/230 VAC $\pm 10\%$ 50-400 Hz less than 25 watts

SIZE: 3.5" high x 19" wide x 15.5" deep

PRICE: \$1995.00

Frequency Synthesizers



NEW

Model 314

Model 314 is a frequency synthesizer of exceptional technical sophistication which features a wide choice of output frequency ranges, spurious signals more than 100 db down, digital frequency control, nominal 40 micro second switching and exceptionally low phase noise.

Model 314 obviates the need to purchase a complete laboratory synthesizer to obtain a narrow band of output frequencies for a specific requirement. It is assembled from a family of individual modules which contain the circuit functions of a direct synthesizer. A synthesizer assembled for one application can be altered or updated for a later requirement. Model 314 makes it possible to optimize both performance and economy.

BRIEF SPECIFICATIONS:

INPUT FREQUENCY: 1 or 5 MHz at 0.5 to 2.0 volts RMS into 500 ohms

OUTPUT FREQUENCY: Any 1 MHz band between DC and 4 MHz or 24 and 35 MHz

OUTPUT LEVEL: 1 V RMS $\pm 10\%$ into a 50 ohm load

FREQUENCY INCREMENTS: 1, 10, 100 or 1000 Hz digital increment steps per customer requirement

SEARCH: Ranges from ± 10 Hz to ± 100 kHz centered on synthesized frequency

SIZE: 19" wide x 7" high 24" deep

WEIGHT: 80 lbs. max.

Pricing is based on number of modules and other features. Quotation on request.

Model 304A, 303A, 302A

The Model 304A is the basic instrument of the Montronics family of frequency synthesizers. Essential features and performance characteristics of the Model 304A are retained in the Models 303A and 302A; similar instruments with lower frequency limits.

FREQUENCY RANGE:

304A	50 Hz to 11 MHz	1 Hz	1V RMS	60 db below fundamental	Local and Remote	\$6950.00
303A	50 Hz to 1.1 MHz	1 Hz	1V RMS	"	" " "	\$4825.00
302A	50 Hz to 110 kHz	1 Hz	1V RMS	"	" " "	\$4250.00

Models offering resolution of 0.1 and 0.01 Hz are available on special order.

Potentiometer and Rheostats

The extensive experience of Fluke in the manufacture of resistive devices is evident in that part of the product line devoted to decade potentiometers and rheostats, and vernier potentiometers and rheostats. These components offer better linearity, higher resistance accuracy, and lower temperature coefficient of resistance than any competitive units. Ease and speed of adjustment, no-drift stability, extremely low leakage, and compact size are but a few of the "plus" features available in this unique equipment of the Fluke line. Use the enclosed card to obtain detailed data.

General Information

ADDITIONAL DATA

Of necessity, information and specifications contained in this catalog are abbreviated. Detailed technical data sheets will be furnished immediately upon request from the Fluke engineering representative in your area (see Page 20), or directly from the factory.

TECHNICAL ASSISTANCE

Demonstration of a particular instrument may be conveniently arranged with the local Fluke representative. Technical assistance in selecting equipment and preparing orders is available from engineering personnel at these local offices, supplemented by a highly qualified staff of applications engineers at the factory.

ORDER BY MODEL NUMBER

When ordering, please specify the complete instrument model number and nomenclature. For example, "Model 803B AC/DC Differential Voltmeter." Note that suffix letter "R" after a model number designates rack mounting version of those instruments available in either a rack or bench mounting configuration. Many Fluke instruments use one configuration for both bench and rack mounting.

SPECIAL INSTRUMENT SERVICE

Many Fluke instruments can be supplied with non-standard paint, altered specification ranges, special connectors, or other special features. Please consult the authorized Fluke representative in your area or the factory Special-Instrument Service for prices, delivery schedules, and special ordering information.

WHERE TO SEND YOUR ORDER

Orders should be made out to John Fluke Mfg. Co., Inc., sent in care of your local Fluke representative (see Page 20), or directly to P.O. Box 7428, Seattle, Wash. 98133.

SHIPPING METHODS

Shipments are made directly from the factory. Unless specifically requested otherwise, express or truck transportation is used, whichever is least expensive and most serviceable to you. Small items may be sent via parcel post. Air freight, air express, or air parcel post will be used when specified on your order.

TERMS

U.S. and Canada terms are 30 days net. Unless credit has already been established, shipments will be made C.O.D., or on

receipt of cash in advance. Terms for orders from other countries are irrevocable letter of credit or cash in advance unless other terms have been previously arranged.

PRICES

Prices are F.O.B. factory, Mountlake Terrace, Washington, unless otherwise specified. All prices are in U.S. funds and are subject to change without notice.

QUOTATIONS AND PRO FORMA INVOICES

Upon request, quotations or pro forma invoices will be furnished to you by your local Fluke sales representative or the John Fluke Mfg. Co., Inc.

SERVICE

Complete facilities are maintained at the factory to repair and recalibrate any Fluke instrument. In most instances, prompt service and parts replacement can also be made by the authorized Fluke sales representative in your area.

When you wish to return an instrument to the factory for repairs, recalibration, or for any other reason, please contact Customer Service, John Fluke Mfg. Co., Inc., P.O. Box 7428, Seattle, Washington 98133, for instructions before shipment. Please give model number, name, serial number and as much information as possible concerning the reason for return. Non-warranty repairs are made at the cost of labor and materials, plus a small service charge. An estimate will be submitted, if requested, before work is started.

PARTS

Most replacement parts may be ordered from your local Fluke representative. Please identify parts by Fluke stock number and part description as shown in the instruction manual, and if possible, by the schematic diagram circuit reference number. Model number and serial number of the instrument and original purchase date should also be given.

WARRANTY

All Fluke instruments are warranted against defective materials and workmanship for one year. All power transformers are warranted for the life of the instrument. Tubes and lamps are considered expendable components and are warranted for 90 days.

The above general information also applies to Montronics' products. Address correspondence and purchase orders to Montronics, Inc., P.O. Box 7428, Seattle, Washington 98133, or contact your nearest representative for detailed specifications.

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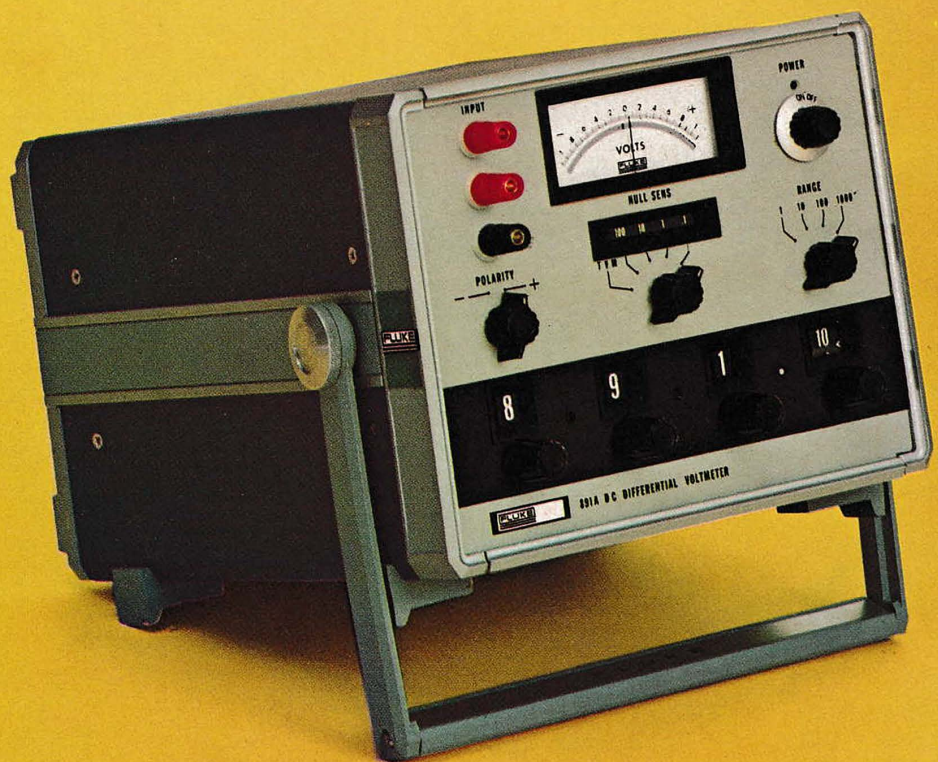
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